

Appl. No. 09/827,440

In the Claims:

Listing of all claims:

1-24. Cancelled.

1           25. (Previously Added) A welding, cutting or heating  
2 power source, comprising:  
3           an input rectifier configured to receive an ac input  
4 and to provide a first dc signal;  
5           a converter configured to receive the first dc signal  
6 and to provide a converter output, and configured to receive  
7 at least one control input;  
8           an output circuit configured to receive the converter  
9 output and to provide a welding, heating or cutting signal;  
10 and  
11           a controller, including a power factor correction  
12 circuit, configured to provide at least one control signal  
13 to the converter.

1           26. (Previously Added) The apparatus of claim 25,  
2 further including an auxiliary power source capable of providing  
3 a control power signal at a preselected control signal voltage,  
4 regardless of the magnitude of the ac input signal.

1           27. (Previously Added) The apparatus of claim 26,  
2 wherein the auxiliary power source includes an auxiliary  
3 transformer with a plurality of primary taps.

1           28. (Previously Added) The apparatus of claim 25,  
2 wherein the converter includes a boost circuit.

1           29. (Previously Added) The apparatus of claim 25,  
2 wherein the output circuit includes a pulse width modulator.

Appl. No. 09/827,440

1 30. (Previously Added) The apparatus of claim 29,  
2 wherein the converter includes a boost circuit.

1 31. (Previously Added) The apparatus of claim 25,  
2 wherein the output circuit includes an inverter.

1 32. (Previously Added) The apparatus of claim 25  
2 wherein the output circuit includes a rectifier.

1 33. (Previously Added) The apparatus of claim 25  
2 wherein the output circuit includes a cycloconverter.

1 34. (Previously Amended) A method of providing a  
2 welding, cutting or heating current, comprising:  
3 boost converting and power factor correcting an ac  
4 input signal to a second ac signal; and  
5 changing the second ac signal into a third signal  
6 having a current suitable for welding, cutting or heating.

35. Cancelled.

1 36. (Previously Amended) The method of claim 34  
2 further including providing control signals to a converter.

1 37. (Previously Added) The method of claim 34,  
2 further including providing auxiliary power signal by  
3 transforming the ac input signal.

1 38. (Previously Added) The method of claim 34,  
2 wherein changing includes pulse width modulating.

1 39. (Previously Added) The method of claim 34,  
2 wherein changing includes inverting.

Appl. No. 09/827,440

1 40. (Previously Added) A welding, cutting or heating  
2 power source, comprising:

3 rectifier means for receiving an ac input providing a  
4 first dc signal;

5 converter means for receiving the first dc signal and  
6 providing a converter output;

7 control means for controlling the converter means,  
8 wherein the control means includes a power factor correction  
9 means for power factor correction, connected to the  
10 converter means;

11 output means for receiving the converter output and  
12 providing a welding, heating or cutting signal.

1 41. (Previously Added) The apparatus of claim 40,  
2 wherein the converter means includes a boost circuit.

1 42. (Previously Added) The apparatus of claim 41,  
2 wherein the output means includes a pulse width modulator.

1 43. (Previously Added) The apparatus of claim 40,  
2 wherein the output circuit includes an inverter.

1 44. (Previously Added) The apparatus of claim 40  
2 wherein the output circuit includes a rectifier.

45. (Cancelled.)

1 46. (New) A welding or cutting power source,  
2 comprising:  
3 an input rectifier configured to receive an ac input  
4 having a magnitude over a range of inputs, wherein the range

Appl. No. 09/827,440

5 includes a highest magnitude at least twice a lowest  
6 magnitude, and to provide a first dc signal;

7 a boost converter, including a boost inductor connected  
8 to receive the first dc signal, wherein the boost converter  
9 has a dc bus output;

10 an output circuit configured to receive the dc bus  
11 output and to provide a welding or cutting signal; and

12 a controller, including a power factor correction  
13 circuit, configured to provide at least one control signal  
14 to the boost converter.

1 47. (New) The apparatus of claim 46, further  
2 including an auxiliary power source capable of providing a  
3 control power signal at a preselected control signal voltage for  
4 a plurality of magnitudes of the ac input signal.

1 48. (New) The apparatus of claim 47, wherein the  
2 auxiliary power source includes an auxiliary transformer with a  
3 plurality of primary taps.

1 49. (New) The apparatus of claim 46, wherein the  
2 output circuit includes a switched circuit connected across the  
3 dc bus, and a transformer having a primary connected in the  
4 switched circuit.

1 50. (New) The apparatus of claim 49, wherein the  
2 switched circuit is a pulse width modulator.

1 51. (New) The apparatus of claim 49, wherein the  
2 output circuit includes an output rectifier connected to a  
3 secondary of the transformer.

Appl. No. 09/827,440

1           52. (New)       The apparatus of claim 51, wherein the  
2 switched circuit includes an inverter.

1           53. (New)       The apparatus of claim 51 wherein the  
2 output circuit includes an inductor connected to the output  
3 rectifier.

1           54. (New)       The apparatus of claim 46 wherein the  
2 output circuit includes a cycloconverter.

1           55. (New)       The apparatus of claim 54, further  
2 comprising a first output stud connected to the inductor, and  
3 disposed to be connected to one of a torch and a ground clamp,  
4 and a second output stud, disposed to be connected to the other  
5 of the torch and a ground clamp.

1           56. (New)       A welding, cutting or heating power  
2 source capable of receiving a range of input voltages,  
3 comprising:

4           an input rectifier configured to receive an ac  
5 input, wherein the range includes a highest magnitude and a  
6 lowest magnitude, and wherein the highest magnitude is at  
7 least twice the lowest magnitude, and wherein the rectifier  
8 is configured to provide a first dc signal;

9           a boost converter connected to receive the first  
10 dc signal and provide a second dc output across positive bus  
11 and a negative bus, wherein the boost converter is  
12 configured to receive at least one control input, and  
13 wherein the boost converter includes a boost inductor having  
14 a first end in electrical communication with the rectifier,  
15 and the boost inductor has a second end in electrical  
16 communication with a switch, wherein when the switch is  
17 closed the second end is in electrical communication with

Appl. No. 09/827,440

18 negative bus, and wherein the second end is in electrical  
19 communication with a diode, and the diode is further in  
20 electrical communication with the positive bus, such that  
21 current can flow from the second end through the diode to  
22 the positive bus;  
23 a switched circuit, connected to receive the dc  
24 bus;  
25 an output transformer, having a primary connected  
26 to receive a second ac signal from the switched circuit and  
27 to provide a third ac signal having a current suitable for  
28 welding or cutting on a secondary;  
29 an output rectifier connected to the secondary,  
30 that provides a third dc signal;  
31 a controller, including a power factor correction  
32 circuit, configured to provide at least one control signal  
33 to the converter; and  
34 an auxiliary power source capable of providing a  
35 control power signal at a preselected control signal  
36 voltage, for a plurality of input voltages.

1 57. (New) The apparatus of claim 56, further  
2 including an auxiliary transformer with a plurality of primary  
3 taps, wherein the auxiliary power controller is in electrical  
4 communication with the plurality of primary taps.

1 58. (New) The apparatus of claim 57, wherein the  
2 switched circuit includes a pulse width modulator.

1 59. (New) The apparatus of claim 58, wherein the  
2 range of input voltages is 230 volts to 575 volts.

Appl. No. 09/827,440

1                   60. (New)       The apparatus of claim 58 wherein the  
2     output circuit includes an output inductor that receives  
3     rectifier.

1                   61. (New)       The apparatus of claim 60, wherein the  
2     dc output is provided across a first stud and a second stud,  
3     wherein the first stud is disposed to be connected to one of a  
4     torch and a ground clamp, and the second output stud is disposed  
5     to be connected to the other of the torch and a ground clamp.